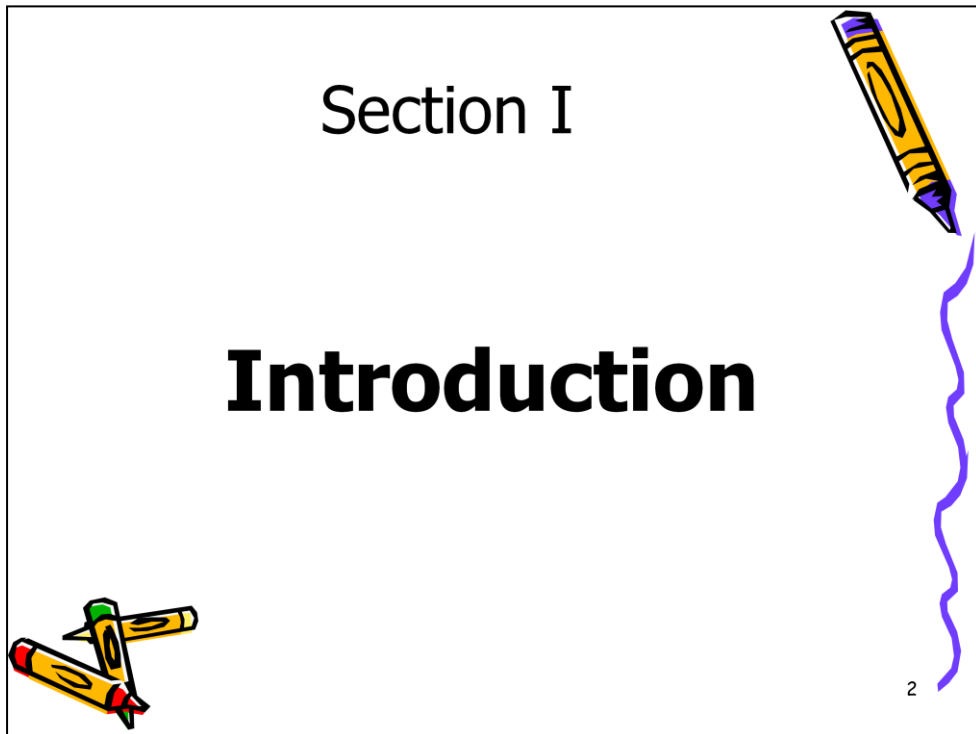


When you need to wear personal protective equipment (PPE), make sure you wear it correctly. PPE can be the last line of defense between you and an injury.



Hazards exist in every workplace in many different forms: sharp edges, falling objects, flying sparks, chemicals, and a myriad of other potentially dangerous situations.

Controlling a hazard at its source is the best way to protect employees. OSHA/State Safety Bureau recommends the use of engineering or work practice controls to manage or eliminate hazards to the greatest extent possible.

For example, building a barrier between the hazard and the employees is an **engineering control**; changing the way in which employees perform their work is a **work practice control**.

When engineering, work practice, and administrative controls are not feasible or do not provide sufficient protection, employers must provide personal protective equipment (PPE) to their employees and ensure its use.

Examples of PPE include such items as “goggles, face shields, hard hats, steel-toe-shoes, and gloves.”

Introduction

- **The need for PPE**
- **Types of PPE**
- **Using PPE**



3

This training program will discuss:

The need to wear PPE,
The different types of PPE, and
How to use and take care of PPE.

Section II

The need for PPE



4

Employers and employees should cooperate when it comes to safety.

The need for PPE

- **Hazard assessment**
- **PPE selection**
- **Employee training**



5

Concerning PPE, employers are responsible for:

Performing a “hazard assessment” of the workplace to identify the need for PPE;
Selecting appropriate PPE; and
Training employees in the use and care of the PPE.

In general, employees should:

Attend training sessions on PPE, and
Wear the PPE properly.

Hazard assessment

Physical hazards:

- **Falling, moving objects**
- **Sharp objects**
- **Temperature extremes**
- **Intense light radiation**
- **Electricity**



6

A first critical step in a PPE program is to identify the hazards in the workplace. This process is known as a “hazard assessment.”

The employer begins the hazard assessment with a walk-through survey of the facility to look for physical hazards such as:

- Falling or dropping objects;
- Sources of motion such as machines or processes where movement could cause an impact between an employee and the equipment;
- Sharp objects that could poke, cut, stab, or puncture;
- Sources of high temperatures that could result in burns, eye injuries, or fire;
- Sources of light radiation, such as welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.; and
- Sources of electricity

Hazard assessment

Health hazards:

- **Dusts**
- **Chemicals**
- **Bloodborne pathogens**



7

The hazard assessment walk-through survey also looks for health hazards such as sources of:

Harmful dusts;

Harmful chemicals, or

Bloodborne pathogens or other biological hazards.

PPE selection

- **Different types of PPE**
- **Different levels of protection**



8

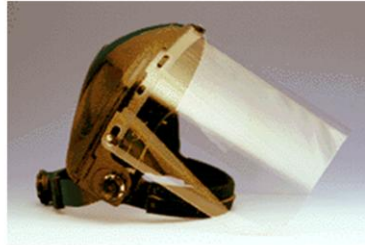
Once the hazards are identified, the employer can select the proper PPE to protect employees from the hazards.

There are many different types of PPE that are designed to protect against different types of hazards. The amount of protection a certain type of PPE can provide is also a consideration in the selection process.

We will be going over the different types of PPE and the protection they provide in more detail; but here is a quick example. Two hard hats may look the same, and they both may provide the same amount of protection from impacts, but one of the hard hats could also be designed to protect against electrical shock.

PPE selection

- **Proper fit**
- **Different sizes**
- **Compatibility**



9

A big factor in the success of a PPE program is proper fit. You will be much more likely to use PPE that fits well and is comfortable to wear. Most types of PPE are available in multiple sizes, and employers should take care to select the proper size for each employee.

If several different types of PPE are worn together, they should be compatible.

For example, there are face shields that are especially designed to fit onto a hard hat. If PPE does not fit properly, you may not be getting the protection you need.

Basically, to select PPE, the employer has to match the type of PPE and its level of protection to the hazard and to the employee.

Learn what PPE you need to wear for the jobs you do;

Find the right size to wear, and wear it every time you do those jobs.

Employee training

- **When PPE is needed**
- **What PPE is needed**
- **How to wear, adjust PPE**
- **Limitations**
- **Care, maintenance, disposal**



10

It's common for employees to be exposed to more than one type of hazard, so don't be surprised if you have to wear several different types of PPE. You may need to add or remove PPE throughout the shift depending on your activities and their associated hazards.

How do you know what PPE to wear during each task?

You need to be trained when PPE is necessary.

What PPE is necessary.

How to properly don, doff, adjust, and wear PPE;

The limitations of the PPE; and

The proper care, maintenance, useful life and disposal of the PPE.

You must be able to demonstrate an understanding of the training and the ability to use PPE properly before you can be allowed to do work that requires the use of PPE.

Keep in mind that wearing PPE does not eliminate the hazard. If the PPE breaks, is worn incorrectly, or otherwise fails, you will be exposed to the hazard. By making sure that the PPE fits, is kept clean, and is properly maintained, you will reduce the possibility that it could fail.

Section III

Eye and face protection



11

The first type of PPE that we are going to take a closer look at is eye and face protection.

Eye and face protection

When exposed to:

- **Flying particles**
- **Molten metal**
- **Chemical liquids, gases, vapors**
- **Radiation**
- **Infectious material**



12

OSHA/State Safety Bureau requires employers to ensure that employees have appropriate eye or face protection if they are exposed to eye or face hazards from:

- Flying particles,
- Molten metal
- Liquid chemicals
- Acids or caustic liquids
- Chemical gases or vapors
- Potentially harmful light radiation, or
- Potentially infectious material

Eye and face protection

Exposures can cause:

- Irritation
- Abrasions
- Cuts
- Burns
- Bruises
- Fractures



13

Unprotected exposures can lead to serious injuries. Examples of potential eye or face injuries include:

- Irritation, abrasions, cuts, or punctures** from dust, dirt, metal, or wood chips entering the eye from activities such as chipping, grinding, sawing, hammering, using power tools, or even being in strong winds;
- Burns or irritation** from splashes of chemicals, corrosive substances, solvents, hot liquids, or other hazardous solutions;
- Bruises, cuts, fractures, or other injuries** from objects swinging into the eye or face, such as tree limbs, chains, tools, or ropes; and
- Burns** from radiant energy from welding or harmful rays from the use of lasers or other radiant light (as well as heat, glare, sparks, and flying particles).

Employers should use the hazard assessment to decide whether workers in these and other job categories need to wear eye and face protection.

Eye and face protection

What to wear:

- **Safety glasses**
- **Goggles**
- **Laser safety glasses**
- **Welding shields**
- **Face shields**



14

Some of the most common types of eye and face protection include the following:

Safety glasses. These protective eyeglasses have safety frames constructed of metal or plastic and impact-resistant lenses. Side shields are necessary when you need protection from flying objects.

Goggles. These are tight-fitting eye protection that completely covers the eyes, eye sockets and the facial area immediately surrounding the eyes. Goggles provide protection from impact, dust, and splashes. Some goggles will fit over corrective lenses.

Laser safety goggles.

Welding shields. Constructed of vulcanized fiber or fiberglass and fitted with a filtered lens, welding shields provide protection from burns caused by infrared or intense radiant light; they also protect against flying sparks, metal spatter, and slag chips produced during welding, brazing, soldering, and cutting operations.

Face shields. These transparent sheets of plastic extend from the eyebrows to below the chin and across the entire width of the employee's head. Some are polarized for glare protection. Face shields protect against nuisance dusts and potential splashes or sprays of hazardous liquids, but they will not provide adequate protection against impact hazards. Face shields used in combination with goggles or safety glasses will provide additional protection against impact hazards.

Eye and face protection

What to wear:



15

All eye and face protection has to meet certain design requirements. Eye and face protection must clearly identify the manufacturer and comply with the industrial consensus standard.

Eye and face protection

How to wear:

- **Proper fit**
- **Unrestricted vision**
- **No interference with other PPE**



16

Eye and face protection:

- **Should fit properly and be reasonably comfortable to wear,**
- **Should provide unrestricted vision and movement, and**
- **Should allow unrestricted functioning of any other required PPE.**

When you need to wear eye and face protection, wear it as it was designed to be worn. For example, safety glasses perched on top of your head aren't protecting your eyes.

Eye and face protection

Limitations:

- **Improper fit**
- **Corrective lenses**
- **Contact lenses**
- **Tinted lenses**



17

Many injuries occur because workers are not wearing any eye protection, but injuries also occur from wearing improper or poorly fitting eye protection. If the protection does not fit right, it does not provide the same protection that it was designed to provide.

And, you have to wear it properly. For example, a face shield is designed to provide additional protection. **Wearing a face shield alone provides limited eye protection, so it is important to wear safety glasses or goggles under a face shield.**

Typical prescription corrective lenses do not provide adequate protection against eye and face hazards. If you wear corrective lenses, there are safety glasses and goggles that are designed to be worn over prescription glasses.

If you wear prescription safety glasses, you can use clip-on or slide on side shields to provide protection from flying objects.

It is fairly obvious that contact lenses do not provide eye and face protection. If you wear contact lenses, you will need to wear any necessary eye and face protection.

When a job calls for tinted lenses, you won't get the protection you need if the lenses are the wrong shade. Don't make substitutions.

Eye and face protection may fog up during some situations. If fogging interferes with your vision, move to a safe area before you remove the eye and face protection to clean it. The equipment's manufacturer may have recommendations to prevent or minimize fogging.

Eye and face protection

Care:

- **Safe storage**
- **Proper cleaning**
- **Disinfect shared PPE**
- **Replace scratched lenses**
- **Repair, replace damaged frames**



18

Eye and face protection is designed to be durable, but you should be careful to store it so that it does not get damaged when it is not in use. For example it is good practice to keep eye and face protection in a protective case or box.

It is also very important to keep lenses clean. Follow the manufacturer's instructions for cleaning. Do not use harsh chemicals or anything abrasive to clean lenses. Typically, eye and face protection can be cleaned with mild soap and water and commercially-available lens cleansers. Use a lens cloth or soft, non-abrasive cloth to dry the equipment.

If protective eyewear is provided for a certain position or task instead of being provided to each individual employee, you must disinfect shared protective eyewear after each use. Follow instructions.

If the lenses become scratched so that you cannot see through them clearly, they need to be replaced. Sometimes the lenses on face shields are equipped with several layers of disposable clear film. A layer of film can be peeled off when it gets dirty. If you use a face shield that has these protective disposable film coverings, be sure to apply a new supply of film when it is time to remove the last layer.

Of course, if the frames become cracked, bent, or otherwise damaged the PPE should be repaired or replaced. Dirty or damaged PPE that cannot be cleaned or repaired should be disposed of.

Section IV

Head protection



19

The next type of PPE we will discuss is head protection.

Head protection

When exposed to:

- **Falling objects**
- **Electrical hazards**
- **Fixed objects**



20

Employers must ensure that their employees wear head protection if:

- Objects might fall from above and strike them on the head;
- There is a possibility of accidental head contact with electrical hazards; or
- They might bump their heads against fixed objects, such as exposed pipes or beams.
- Whenever there is a danger of objects falling from above, such as working below others who are using tools, head protection must be worn.

Head protection

Exposures can cause:

- **Impact injuries**
- **Penetration injuries**
- **Electrical shock, burns**



21

Head injuries can cause permanent disabilities and they are often fatal. If objects fall onto workers' heads, or if employees bump their heads against fixed objects, they could suffer bruises, abrasions, concussions, fractures, and other trauma. Objects could become embedded in the head. Contact with exposed energized parts can cause burns, electrical shock, or electrocution.

Wearing a safety helmet or hard hat is one of the easiest ways to protect yourself from a head injury.

Head protection

What to wear:

- **Hard outer shell**
- **Shock-absorbing suspension system**
- **Resists penetration**



22

Hard hats must have a hard outer shell and a shock-absorbing lining that incorporates a headband and straps that suspend the shell from 1 to 1 ¼ inches away from the head. This type of design provides shock absorption during an impact and ventilation during normal wear.

In general, protective helmets or hard hats should resist penetration by objects and absorb the shock of a blow. In addition they should be able to hold up to the environment; and in case workers are exposed to sparks or flame, protective helmets must resist burning.

Head protection

How to wear:

- **Adjust headband, suspension straps**
- **Chin strap**
- **Brackets, clips to attach PPE, accessories**



23

Head protection that is either too large or too small is inappropriate for use, even if it meets all the other requirements. The headband and suspension system in a hard hat is adjustable so that you can get a proper fit. Adjust the fit so that the shell is from 1 to 1 ¼ inches away from your head. The hat should not bind, slip, fall off, or irritate the skin.

In some situations, such as when you will be working at heights, you will want to add a chin strap to ensure the hard hat won't fall off.

Some hard hats allow for the use of various accessories. They may have slots for earmuffs, goggles, face shields and mounted lights. You don't want one type of PPE to interfere with the fit of another type of PPE. The accessories must not compromise the safety elements of the equipment.

Head protection

How to wear:

- **Wear as designed, tested to be worn**
- **Backwards (mfg. approval)**
- **Sweatbands, liners for hard hats**



Don't wear another hat under your hard hat



24

Hard hats must be worn as the manufacturer intends them to be worn. This means that if the hard hat was designed and tested with the bill extended forward over the face, the hard hat must be worn with the bill forward. If the hard hat isn't worn the right way, it will not provide reliable protection.

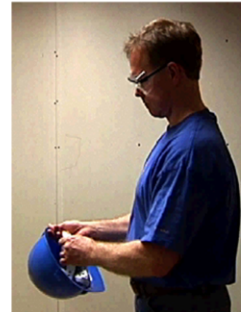
Do not wear a hard hat backwards unless the manufacturer expressly allows this. A hard hat manufacturer can design and test a hard hat to be effective when worn reversed. The manufacturer would provide this information along with instructions on how to reverse the headband and suspension system so that you would have a proper fit if the shell was worn with the bill to the rear.

Similarly, do not wear a sweatband or cap under a hard hat unless it is designed for that purpose. The hard hat must fit snugly in order to provide protection.

Head protection

Care:

- **Inspect for dents, cuts, cracks, wear, damage**
- **Keep clean**
- **Don't store in direct sunlight**
- **Repair, replace damaged parts**
- **Replace after an impact**



25

A hard hat will only offer protection if it is in good condition. Check your hard hat each day for signs of dents, cracks, tears, holes, excessive wear to the suspension system, or other damage. Inspect the shell, suspension straps, headband, sweatband, and any accessories. Do not use the hard hat if you find any signs of damage. Of course, never drill holes into the hard hat's shell. You will also be more likely to notice any damage if the hard hat is clean.

Periodically wash the hard hat in warm, soapy water. Don't use harsh solvents or hard brushes that can weaken and damage the shell and suspension system. Paint thinners and some solvents and cleaning agents can weaken the hard hat's shell and may eliminate electrical resistance. It isn't a good practice to cover the shell with paint, markings, or stickers. If the shell is covered, you may not be able to see cracks or other damage and any chemicals in the coverings themselves might cause damage.

Don't keep your hard hat where it is exposed to long periods of direct sunlight and high heat (for example on a car seat). The ultraviolet rays in sunlight can degrade the plastic used in the hard hat. Signs of damage include a dulling, chalking, crazing, or flaking on the surface of the shell.

Hard hats with any defects, such as perforation, deformity of the brim or shell or indication of exposure of the brim or shell to heat, chemicals, or ultraviolet light should be removed from service and replaced. Also, replace a hard hat if it sustains an impact, even if damage is not noticeable.

Section V

Foot protection



26

Let's take a closer look at foot protection.

Foot protection

When exposed to:

- **Falling, rolling objects**
- **Electrical hazards**
- **Static electricity**
- **Hot substances**
- **Corrosive, toxic materials**



27

If you face possible foot injuries from falling or rolling objects, or from crushing or penetrating materials, you need to wear protective footwear.

If your feet may be exposed to electrical hazards, you need to wear non-conductive footwear. On the other hand, when static electricity is a hazard, you may need to wear static dissipative or conductive footwear. Also, if your work involves exposure to hot substances or corrosive or toxic materials, wear protective gear that covers exposed body parts, including your legs and feet. Examples of situations in which you need to wear foot protection include:

- Working where heavy objects such as barrels or tools might roll onto or fall onto your feet;
- Working around sharp objects such as nails or spikes that could pierce the soles or uppers of ordinary shoes;
- Working in areas where electrical hazards are present;
- Working in areas where molten metal might splash on your feet or legs; and working on or around hot, wet, or slippery surfaces.

Foot protection

Exposures can cause:

- Bruises
- Cuts
- Fractures
- Puncture wounds
- Electric shock
- Electrocution
- Burns
- Irritation



28

Unprotected exposures can lead to serious injuries. Examples of potential foot injuries include:

Bruises, abrasions, cuts, or fractures from falling or rolling objects;

Cuts and puncture wounds from penetrating materials;

Burns, electric shock, or electrocution from working on or near exposed energized parts;

Injuries related to discharges of static electricity

Burns or irritation from sparks or slag; and

Burns or irritation from splashes of chemicals, corrosive substances, solvents, hot liquids, or other hazardous solutions.

Foot protection

What to wear:

- **Safety-shoes**
- **Puncture-resistant insoles**
- **Metatarsal guards**



29

Foot protection choices include the following: Safety shoes have impact-resistant toes and heat resistant soles that protect the feet against hot work surfaces common in roofing and paving.

Puncture resistant metal insoles in some safety shoes protect against puncture wounds and metatarsal guards protect the instep area (top of the foot) from impact and compression.

Foot protection

How to wear:

- **Get a good fit!**
- **Wear when needed**
- **Avoid cross-contamination**



30

Just as with any shoe, it is essential to get a good fit when you select safety shoes. When you try them on, wear the same type of sock that you normally wear on the job. They should fit just about the same way that normal street-wear shoes fit you, and you will probably wear the same size safety shoe as you normally wear. Completely lace up the shoes when you try them on, and walk around for awhile to test the fit. This is your chance to make sure the safety shoe fits properly. On the job, be sure to change into your safety shoes before you enter areas where foot protection is needed. Do not wear shoes that are contaminated with toxic substances into clean areas.

Foot protection

There are limitations!



31

No protective footwear can protect against all potential foot injuries. However, when you drop a heavy tool, machine part, or brick, you will be glad you were wearing safety shoes.

Foot protection

Care:

- **Inspect before use**
- **Cracks, holes, separation**
- **Keep clean**
- **Replace damaged PPE**



32

As with all protective equipment, safety footwear should be inspected prior to each use. Check for wear and tear and this includes looking for cracks or holes, separation of materials, and broken buckles or laces. The soles of the shoes should be checked for pieces of metal or other embedded items that could present electrical or tripping hazards. Be sure to follow the manufacturers' recommendations for cleaning and maintenance.

DAMAGED PPE THAT CANNOT BE REPAIRED SHOULD BE DISPOSED OF!

Section VI

Hand protection



33

Hand protection should not be overlooked.

Hand protection

When exposed to:

- **Chemicals**
- **Hot, cold materials**
- **Electrical hazards**
- **Sharp, rough materials**



34

You need to wear hand protection if your hands could be exposed to:

- Chemicals or other harmful substances,
- Hot or cold materials
- Electrical hazards from exposed energized parts, and
- Sharp or rough materials

Hand protection

Exposures can cause:

- Burns
- Electrical shock
- Cuts, abrasions, punctures
- Bruises, fractures



35

To understand the need to wear hand protection, it helps to be aware of the types of injuries the hand protection can help prevent.

Some chemicals can absorb through the skin to contribute to your overall exposure.

Many chemicals can burn or irritate the skin.

Hot objects or materials can cause skin burns. Contact with cold objects or materials can cause frostbite.

Arc flash or direct contact with exposed energized parts can cause serious burns, electric shock and electrocution.

Cuts, abrasions and punctures can be the result of handling sharp or rough materials. Mishaps during material handling activities can also cause blisters, bruises, and fractures.

Hand protection

What to wear - Gloves:

- **Rubber, plastic**
- **Leather**
- **Canvas, fabric**
- **Metal mesh**



36

Of course machine guards and other guards and other barriers keep you from placing your hands in areas where they are at risk, but there cannot be a barrier around every hazard.

When control measures don't eliminate the hazard, you will need to wear hand protection.

Hand protection can include various types of gloves and finger guards. Gloves are usually identified by the type of material that they are made from. Examples include:

- Rubber or plastic
- Leather
- Canvas or fabric, and
- Metal mesh

Hand protection

What to wear - Rubber gloves:

- **Chemical resistance**
- **Conditions of use**
- **Thickness, grip**
- **Mfg. recommendations**



37

There are many types of rubber gloves. In general, rubber gloves are used to protect your hands from contact with chemicals and other harmful substances (such as blood or other potentially infectious materials). Chemicals can attack rubber. As a general rule, the thicker the glove material, the greater the chemical resistance; but thick gloves may impair grip and dexterity.

So when selecting gloves to protect against chemical exposure hazards, always check with the manufacturer or review the manufacturer's product literature to determine the gloves' effectiveness against specific workplace chemicals and conditions.

Hand protection

What to wear – Gloves for the job!



38

Be sure that you wear the glove for the job! Use the glove as it is intended to be used!

Hand protection

How to wear:

- **Good fit**
- **Layers**
- **Avoid contamination**



39

Gloves must have a good fit. Your ability to handle tools and materials depends on having gloves that are the right size.

Some jobs could require you to wear layers of different types of gloves.

When you wear rubber gloves to protect against chemicals, the outside of the glove becomes contaminated with the chemical and you don't want to expose your skin to the contaminated surface of the gloves when you take the gloves off.

Hand protection

Care:

- **Inspect for tears, punctures**
- **Electrical protective glove tests**
- **Keep clean if re-used**
- **Replace damaged PPE**



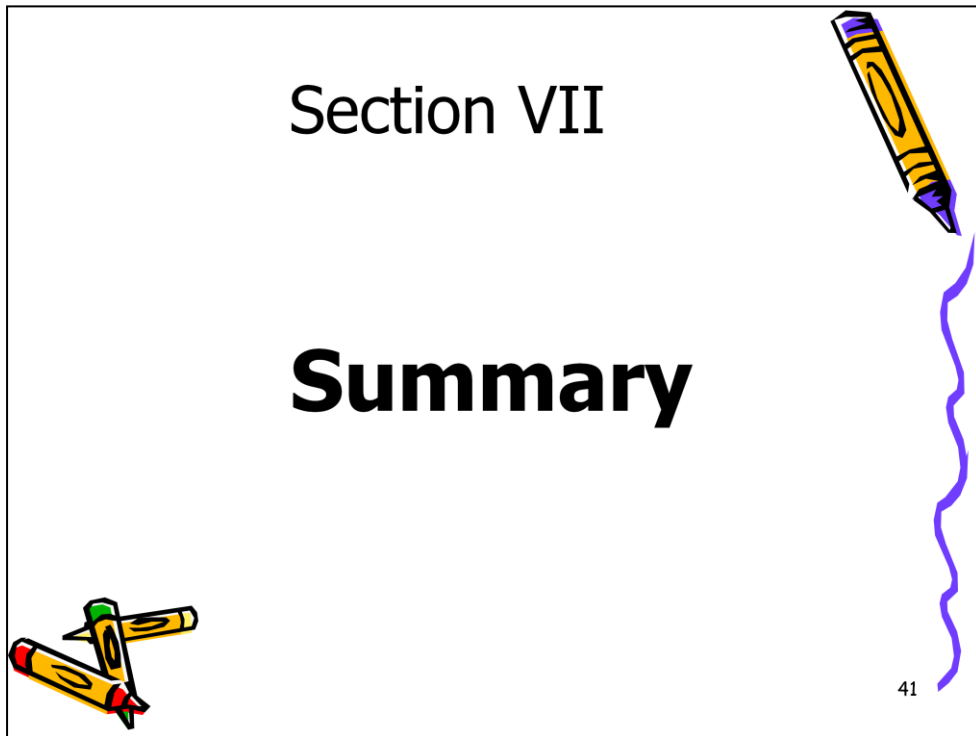
40

Again, INSPECT! Inspect your gloves before each use to be sure they are not torn, punctured, or damaged in any way. A glove that looks discolored or feels stiff may be damaged. If you re-use gloves, built-up dirt, grease, and stains can hide damage.

Gloves worn for electrical protection have specialized inspection requirements and must undergo period electrical tests to ensure they aren't damaged.

Be sure to follow recommendations by the manufacturer for cleaning and maintenance.

REMEMBER, if a glove is damaged, it will not protect you. Damaged PPE that cannot be repaired should be disposed of!



Both employers and employees can work together to make sure the PPE is:

- Inspected,
- Kept clean,
- Stored properly,
- Properly maintained and repaired, and
- Replaced when needed.

Summary

- **The need for PPE**
- **Types of PPE**
- **Using PPE**



42

In this training program, we discussed:

- The need for PPE,
- The various types of PPE, and
- How to use PPE so it gives you the best protection.



Are there any questions?

Proceed to taking the test for credit for this training. Personal Protection Equipment Test.